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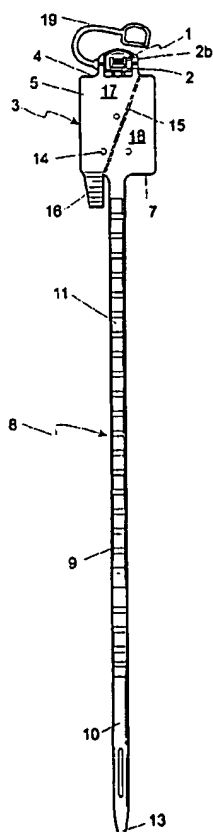
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| <p>(51) <b>International Patent Classification<sup>7</sup>:</b> <b>G09F 3/03</b></p> <p>(21) <b>International Application Number:</b> <b>PCT/BR00/00028</b></p> <p>(22) <b>International Filing Date:</b> <b>3 April 2000 (03.04.2000)</b></p> <p>(25) <b>Filing Language:</b> <b>English</b></p> <p>(26) <b>Publication Language:</b> <b>English</b></p> <p>(71) <b>Applicant (for all designated States except US):</b> <b>ELC PRODUTOS DE SEGURANÇA INDÚSTRIA E COMÉRCIO LTDA.</b> [BR/BR]; Rua São Luiz Gonzaga, 912, CEP-20910-060 Rio de Janeiro, RJ (BR).</p> <p>(71) <b>Applicant (for US only):</b> <b>DE FARIA DE LIMA CASTRO, Lydia</b> (executrix for the deceased inventor) [BR/BR]; Rua Othon Bezerra de Mello, 40, Rio de Janeiro, RJ (BR).</p> | <p>(72) <b>Inventor:</b> <b>DE LIMA CASTRO NETTO, Eduardo</b> (deceased).</p> <p>(74) <b>Agent:</b> <b>DANNEMANN, SIEMSEN, BIGLER &amp; IPANEMA MOREIRA;</b> Rua Marquês de Olinda, 70, Botafogo, Caixa Postal 2142, CEP-22251-040 Rio de Janeiro, RJ (BR).</p> <p>(81) <b>Designated States (national):</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.</p> <p>(84) <b>Designated States (regional):</b> ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,</p> |
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*[Continued on next page]*

**(54) Title: FASTENING-TYPE SECURITY SEAL**



**(57) Abstract:** The invention refers to a fastening-type security seal comprising a sealing body (1) with an internal tooth within the tunnel (2) and an elongated fastening part (8) possessing a series of sealing formations (11) throughout its length. The tip (13) of the fastening part (8) can be passed through the tunnel (2), so that the sealing formations (11) successively engage with an internal tooth (2b) in the tunnel, when the thus formed loop is tightened. An identification tag (3) is an integral part of the sealing body (1). With a view to eliminating the need to use a cutting instrument to remove the seal, without detracting from the physical resistance of the fastening part in the longitudinal direction, and also reducing the amount of plastic used in manufacturing the device, the tag (3) features a weakening line (15) that extends from the first edge (4) to the second edge (7) of the tag, dividing the tag into first region (17) on one side of the line (15) and second region on the other side of the line (15). The sealing body (1) is integrated with the first region (17) of the tag (3); the fastening part (8) is integrated with and extends from the second region (18) of the tag (3). And the tearing means is situated on the tag (3), adjacent to one of the ends of the weakening line, which enables one to tear the tag, thus separating the first region (17) from the second region (18).

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**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Title: "FASTENING-TYPE SECURITY SEAL"**

This invention refers to a fastening-type security seal made from a single piece of plastic material. This type of seal has a sealing body forming a tunnel, provided internally  
5 with at least one tooth, and an elongated part, or flexible strap, with one end as an integral part of the body, and the other end free. Along the elongated part a series of sealing formations is provided, so that, when the free end is inserted into the tunnel of the sealing body and pulled out at the other end of the tunnel, the sealing formations successively engage with the tooth in a ratchet-like manner to prevent withdrawal of the strap part from the tunnel.  
10 nel.

Security seals of the type mentioned above are widely used, including as fasteners. However, when they are used as security seals, an identification tag, usually forming an integral part of the body, serves to personalize the seal by means of a number and/or bar code. The tag is located on the side of the body opposite that of the elongated or fastening part.  
15 tening part.

In practice, there are two drawbacks in this well-known type of seal. First, it is essential that the fastening part present considerable strength in the longitudinal direction, in view of the use of the device as a fastener, that is to say, the seal is tightened around the object that is being closed. It is evident that a low-resistance part of the fastener would run  
20 the risk of breaking during normal use. Thus, when it is desired to open the closed object, it is necessary to break the fastening part. This is done by cutting it with a pair of scissors, a knife or the like. In addition to the inconvenience of the need for scissors or knife to cut the seal, the pair of scissors or knife itself may damage the closed object, thus rendering it useless for subsequent use. For instance, if the object is a mail or money bag, a cut would  
25 make it useless forever, since any repair would be seen as tampering with the bag.

Another drawback is that the identification tag projects out of the closed bag.

This type of security seal is exemplified in Pat. PI 8906110-1.

The first drawback was partly overcome in some seals by weakening the fastening part, thus allowing the latter to be broken by hand at the time of opening. However, in order to maintain the physical strength of the fastening part at a level compatible with the use of the device, the physical effort required for breaking the fastening part is excessive and may injure the fingers of the user. In addition, with a view to avoiding the excessive weakening of the fastening part, a thickening of the fastener in the region of the weakening has been created. This results in an increase in the amount of raw material (plastic) and, consequently, the manufacturing cost.

The objective of this invention is to provide a security seal of the above-mentioned type, which can be removed from a bag by means of destruction thereof, without the need for resorting to a cutting instrument, without weakening the fastening part and without increasing the amount of raw material. Instead, the invention provides a decrease in the amount of raw material used in manufacturing the seal. The seal of this invention may be destroyed and removed from the closed object totally by hand. In addition, the identification tag no longer projects out of the closed object, remaining attached, flush with the latter and used to reduce the length of the fastening part.

According to this invention, a security seal of the type described above is characterized by the fact that:

- a) the tag features a weakening line extending from the first edge to the second edge of the tag, dividing the tag into one region on one side of the line and a second region on the other side of the line;
- b) the sealing body is integrated with the first region of the tag;
- c) the fastening tag is integrated with and extends from the second region of the tag; and
- d) means of tearing are present on the tag, adjacent to one of the ends of the weakening line, which enable one to tear the tag, separating the first region from the second region.

It is preferable that the first and second edges of the tag be opposite edges, the tear line being generally diagonal with respect to the tag and the tear line, comprising a groove on the side of the tag designed to face the object being closed.

5 It is understood that the identification tag will be located between the sealing body and the fastening part. In this way, the fastening part will be shortened by an extent equal to the dimension, in the longitudinal direction, of the tag, reducing the amount of raw material used.

In addition, since the weakening line extends over at least the width of the tag, it is much longer than the weakening region would be if it were made on the fastening part.  
10 Thus, the weakening may be made so as to facilitate the manual tearing of the tag with minimal physical effort.

The invention will be better understood from the following description, given by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of one side of a security seal manufactured according to  
15 the present invention;

Figure 2 is a plan view of the other side of the same security seal; and

Figure 3 is a perspective view of the security seal at the moment of being opened by tearing its identification tag.

Referring to Figures 1 and 2 of the drawings, a security seal "pull-tight" type presenting the new features of this invention comprising a sealing body 1 forming a tunnel 2. A  
20 flexible sealing tooth 2a is situated on the lower side of the tunnel 2, and a ramp-shaped protuberance 2b is located on the opposite side.

There is, moreover, a rectangular identification tag 3 with the first edge 4. The sealing body 1 is integrated with the identification tag 3, being attached to the latter at a  
25 region approximately in the middle of edge 4. It will be seen that the sealing body 1 projects from the face 5 of the tag (Figure 2), this face 5 being the internal face of the tag 3, that is, the face designed for facing the object being closed/fastened and sealed by the security seal. The base of the sealing body 1 is approximately in the same plane as the other face or external face 6 of the tag 3 (Figure 1), that is to say, the face designed for facing away from  
30 the object being closed/fastened and sealed.

From the middle of the second edge 7, opposite to the first edge 4, of the identification tag, an elongated fastening part 8 extends. This fastening part 8 has a main extension 9 and a free end 10. Along the main extension 9 and part of the end 10, on the inner side (see Figure 2) there is a series of sealing formations or teeth 11 suitable for engaging  
5 with the sealing tooth 2a in the tunnel 2 of the sealing body 1. As can be seen in Figure 2, the outer side of the main extension 9 of the fastening part has a longitudinal groove 12 that receives the ramp-shaped small protuberance 2b, when it passes through the tunnel 2 during application of the seal.

The free end 10 of the fastening part does not have the teeth 11 and decreases  
10 in width to a free tip 13, which may be easily introduced into the tunnel 2 on the base of the sealing body 1 (Figure 2). When the free tip 13 of the fastening part comes out at the other side of the tunnel (seen in Figure 1), it is pulled out by hand until the loop formed by the fastening part 8 reaches the desired size or produces the adequate tension around the object being sealed (for instance, the mouth of a bag). As the tip 13 is pulled, the teeth 11 on  
15 the main extension 9 of the fastening part successively pass through the internal tooth 2a in the tunnel 2, the tooth elastically yielding with the passage of each tooth and then returning to the original configuration, to prevent withdrawal of the elongated fastening part. It will be understood that the engagement between the teeth represents a ratchet-like action, it being always possible to tighten the loop formed by the fastening part, but not to loosen it.

20 The inner face 6 of the identification tag is formed of three small sharp teeth 14, which serve to grasp at the material of a bag when the seal is used to close and seal the bag. This facilitates the tightening of the seal, preventing it from sliding around the mouth of the bag.

The inner face 6 of the identification tag 3 also possesses a weakening groove  
25 15 and a tear-off tag 16. The groove 15 extends from a point along the first edge 4 of the tag, in an approximately diagonal direction, as far as a point at the opposite edge 7 of the tag. The tear-off tag 16 lies adjacent to the end of the groove 15 at this second edge 7. It will be seen that the weakening line or groove 15 divides the tag 3 into a first region 17, integrated with the sealing body 1 and a second region 18 integrated with the fastening part  
30 8.

The security seal is also provided with a small tailpiece 19, extending from the base of the sealing body 1. This tailpiece has a ring at its free end, which can be used for fixing an address tag or the like.

Figure 3 is a perspective view of the seal illustrated in Figures 1 and 2, in the closed configuration (without the closed object) at the moment of opening or destroying the seal. Figure 3 shows the loop formed by the fastening part 8 and the individual identification number (bar code with Arabic numerals) on the outer face 6 of the identification tag 3. At the moment of opening, as illustrated, the tear-off tag 16 has already been partly pulled and the tag 3 partly torn along the tear line or groove 15. In continuing the action of pulling tag 16, the identification tag 3 will be totally torn, from edge 7 as far as edge 4. This will split the identification tag 3, separating the first region 17 from the second region 18, and will totally destroy the identification number and open the loop formed by the closed seal. The closed object will thus be opened without any damage, since no cutting tool has been employed for this purpose.

An essential characteristic of this invention is the fact that the tag 3 serves as a connection between the sealing body 1 and the fastening part 8, since this reduces the length of the fastening part by the distance between the edges 4 and 7 of the tag 3. In this way, the tag itself saves raw material otherwise used to form part of the fastener. This makes the manufacture of this closing seal more economical. Besides, as already mentioned, the tag with the groove 15 has a relatively high physical resistance in the direction of the length of the fastening part, but at the same time tearing it is relatively easy.

The above description has been made with respect to a presently preferable embodiment of this invention, and it should be understood that various modifications and alterations are possible, without departing from the basic concept of the invention. For instance, the weakening line may have any suitable shape; it is not essential for it to be a groove. It could comprise multiple small holes or tears, a combination thereof with a groove or any other weakening that enables one to tear off the tag 3. Equally, the weakening line does not need to be diagonal, nor even a straight line. Again, it is enough that it facilitates the tearing-off of the tag so as to separate the sealing body 1 from the fastening part 8.

The tearing means is constituted of the pulling tag 16 in the seal illustrated in the drawings. However, they could have other shapes, such as a pin or other type of protuberance, or even a strap or hole where a non-cutting tool (for example, a hook) could be fitted.

The other features of the seal could be modified too. For instance, the teeth in the fastening part could be on both sides, instead of only one side, as illustrated in the mentioned Patent PI 8906110-1.

These and other modifications that do not detract from the basic concept set forth here should therefore be considered to be within the scope of the invention, which is determined by the characteristics (and their equivalents) defined in the accompanying claims.



**Claims**

1. A fastening-type security seal comprising a sealing body forming a tunnel containing at least one tooth, an identification tag integrated with the sealing body and an  
5 elongated fastening part having one end integrated with the sealing body and a second free end, a series of sealing formations being provided along the elongated fastening part, so that, when the free end is inserted into the tunnel of the sealing body and pulled out at the other side of the tunnel, the sealing formations will successively engaged with the tooth in a ratchet-like manner, preventing withdrawal of the elongated fastening part from the tunnel,  
10 characterized by:

a) the tab (3) featuring a weakening line (15) that extends from the first edge (4) to the second edge (7) of the tag, dividing the tag into the first region (17) on one side of the line (15) and the second region (18) on the other side of the line (15);

b) the sealing body (1) is an integral part of the first region (17) of the tab (3);

15 c) the fastening part (8) is integrated with and extends from the second region (18) of the tab (3); and

d) tearing means (16) are located on the tag (3), adjacent to one of the ends of the weakening line, which enable one to tear the tag, separating the first region (17) from the second region (18).

20 2. A security seal according to claim 1, characterized by the fact that the tearing means comprises a pulling tag (16).

3. A security seal, according to claim 1 or 2, characterized by the identification tag (3), which is approximately rectangular and the first and second edges (4, 7) are opposite edges of the tab.

25 4. A security seal, according to claim 3, characterized by the weakening line (15), is approximately diagonal in relation to the tag (3).

5. A security seal according to any one of the preceding claims, characterized by the weakening line (15), is a straight line.

6. A security seal according to any one of the preceding claims, characterized by the weakening line, comprises a groove (15).

**AMENDED CLAIMS**

[received by the International Bureau on 13 March 2001 (13.03.01);  
original claims 1-6 replaced by new claims 1-6 (2 pages)]

1. A fastening-type security seal comprising:

a sealing body forming a tunnel containing at least one tooth;

an elongate identification tag integral with the sealing body and having a first end, a second end, a first side edge and a second side edge opposite said first side edge, said identification tag being formed with a weakening line which extends from said first edge (4) to said second edge of said tag, dividing the tag into a first region on one side of said weakening line and a second region on the other side of said line, said first region including said first end of the tag and said second region containing said second end of the tag;

tearing means formed on said identification tag adjacent one of the ends of the said weakening line, which permit tearing of the tag, separating said first region from said second region;

and an elongated fastening part having one end integral with said second end of said identification tag and a second free end, a series of sealing formations being provided along the elongated fastening part, so that when the free end of said fastening part is inserted into the tunnel of the sealing body and pulled out at the other side of the tunnel, the sealing formations will be successively engaged with the tooth in a ratchet-like manner, preventing withdrawal of the elongated fastening part from the tunnel,

characterised in that said sealing body (1) is integral with said first region (17) of said identification tag (3), being attached thereto at said first end of the tag, whereby said tag lies between the sealing body (1) and the elongated fastening part (8).

2. A security seal according to claim 1, characterised in that said identification tag (3) has an identification area (6) and that said weakening line (15) passes through said identification area.

3. A security seal according to claim 2, characterised in that said identification tag (3) is substantially rectangular and that said weakening line (15) extends substantially from a point adjacent said first side of the tag adjacent one (4) of said ends of the tag to a point adjacent the second opposite side of the tag adjacent the other (7) of said ends of the tag.

4. A security seal according to any one of the preceding claims, characterised in that said weakening line (15) is a straight line.

5. A security seal according to any one of the preceding claims, characterised in that said weakening line (15) comprises a groove.

6. A security seal according to any one of the preceding claims, characterised in that said tearing means comprises a pulling tab (16).

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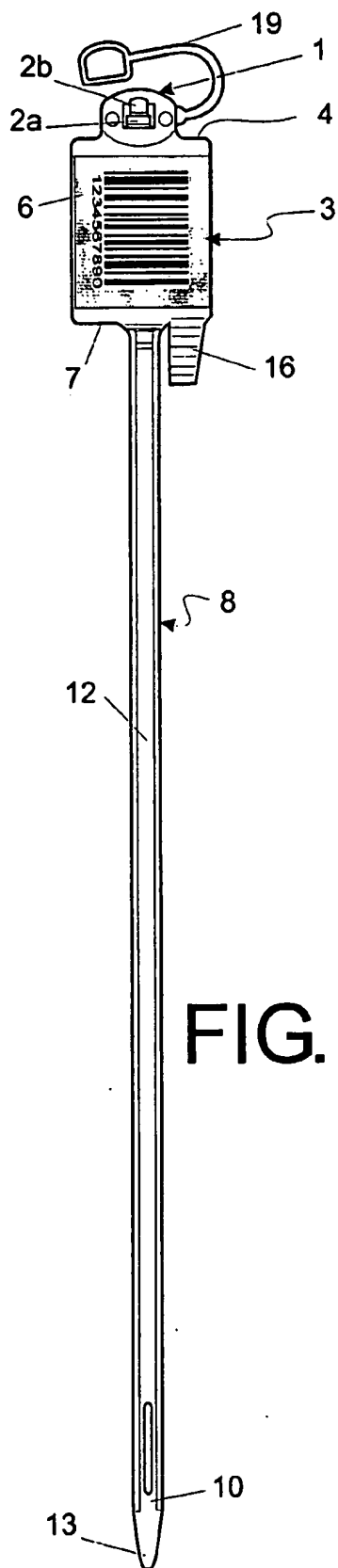


FIG. 1

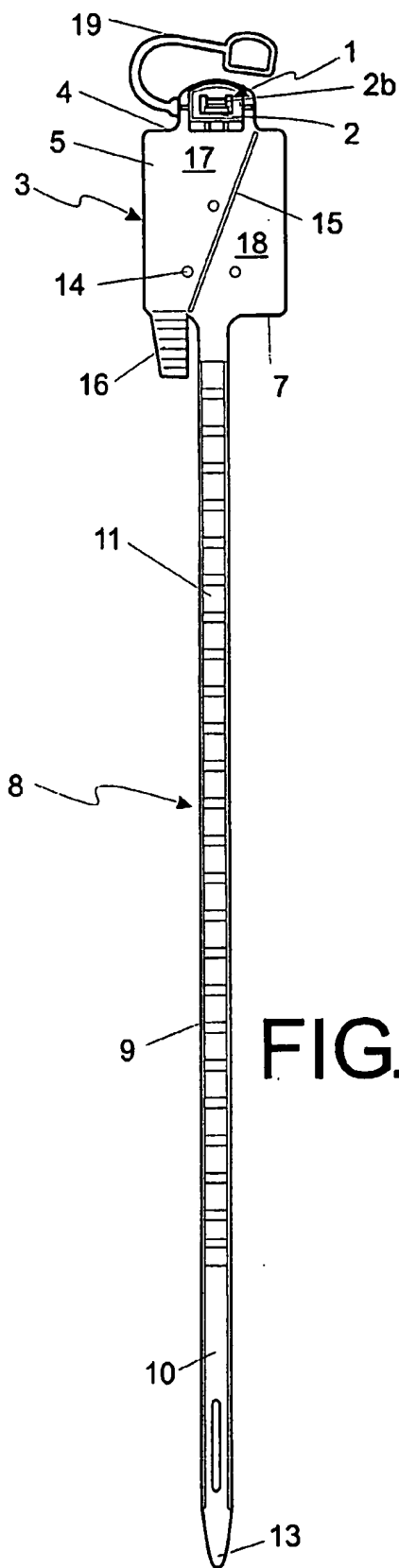


FIG. 2

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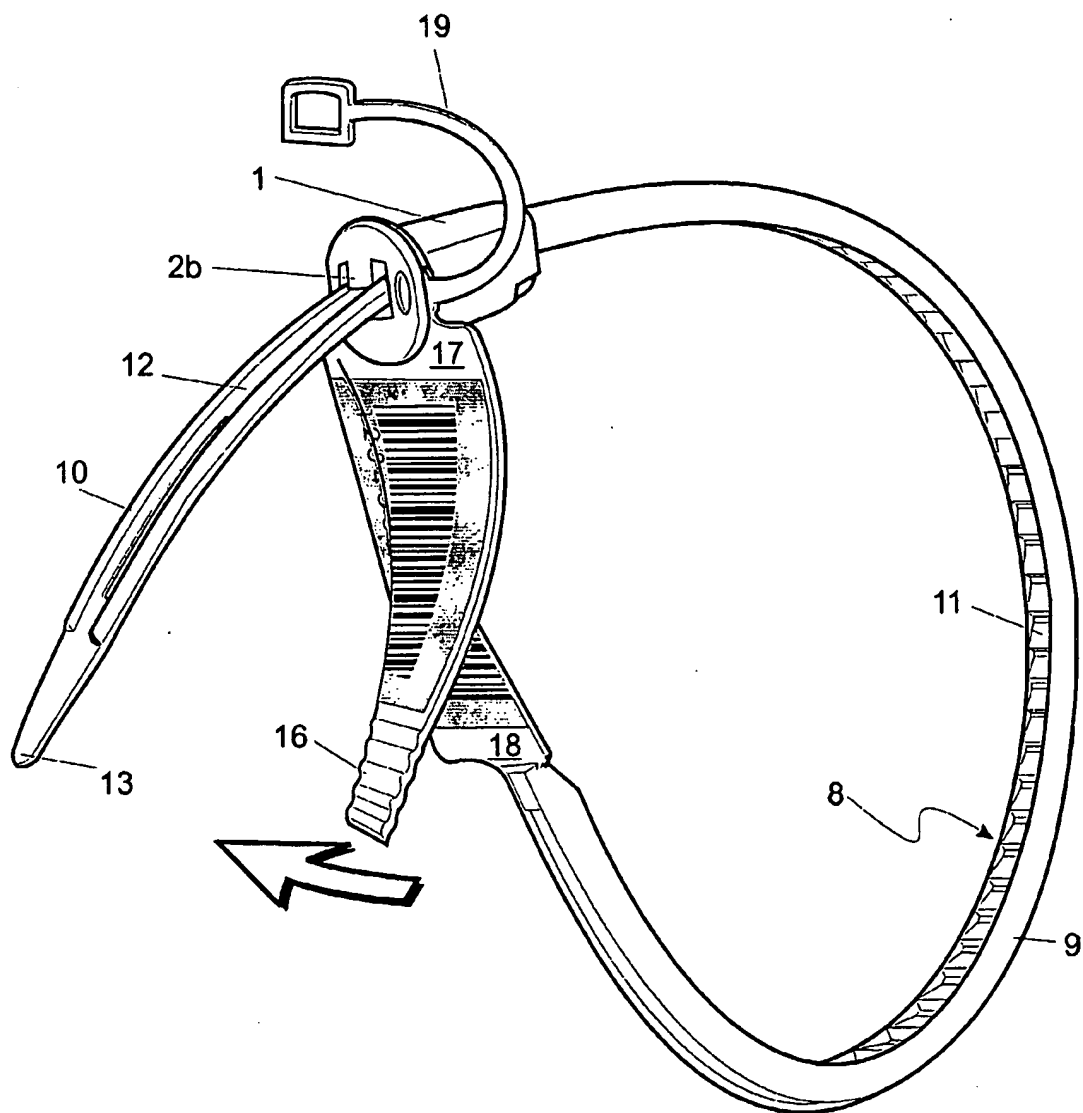


FIG. 3

## INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/BR 00/00028

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 G09F3/03

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 908 863 A (STOBA AG) 14 April 1999 (1999-04-14) column 2, line 33 -column 3, line 26; figures 1-4	1-6
X	EP 0 676 736 A (BROOKS TODO SEGURIDAD EN ESPAN) 11 October 1995 (1995-10-11) column 3, line 22 -column 4, line 42; figures 1,15,16	1-6

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.**\* Special categories of cited documents:**

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search

2 November 2000

Date of mailing of the international search report

13/11/2000

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

Intl onal Application No

PCT/BR 00/00028



Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0908863	A	14-04-1999	WO	9918559 A	15-04-1999
EP 0676736	A	11-10-1995	ES	1027598 U	01-09-1994






## Tamper resistant seal

**Patent number:** EP0895213  
**Publication date:** 1999-02-03  
**Inventor:** BURT DAVID AUSTIN (GB)  
**Applicant:** ITW LTD (GB)  
**Classification:**  
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- **European:** B65D63/10B3P2; G09F3/03  
**Application number:** EP19980305760 19980720  
**Priority number(s):** GB19970016017 19970729

**Also published as:**

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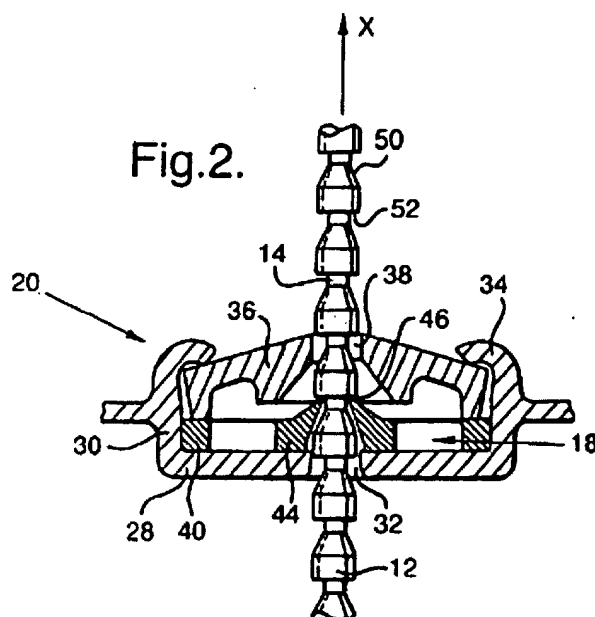
**Cited documents:**

 US4690443  
 US3467427  
 US3466077

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**Abstract of EP0895213**

A tamper resistant seal comprises a series of ratchet teeth (12) arranged along a strap (14), with one end of the strap (14) being secured to a body (16) and the other end of the strap (14) being insertable into the body (16) to move the ratchet teeth (12) sequentially past a resiliently deformable catch (18), characterised in that the resiliently deformable catch (18) includes a pair of opposed jaws (44) which are movable laterally primarily with a vice-like action (spreading) rather than a collet-like action (flexing).



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